

Name:

Date:

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PART A In the space on the left, write the letter of the term or phrase which **best** completes the statement or answers the question (1 mark each).

- _____ 1. Classify the following reaction: $\text{Mg(OH)}_2 + \text{H}_2\text{SO}_4 \rightarrow 2\text{H}_2\text{O} + \text{MgSO}_4$
a. Synthesis
b. Single replacement
c. Combustion
d. Neutralization
- _____ 2. Combustion reactions involve reacting a hydrocarbon with ...
a. A salt
b. Oxygen
c. An acid
d. A metal
- _____ 3. Classify the following reaction: $2\text{FeN} \rightarrow \text{N}_2 + \text{Fe}$
a. Single replacement
b. Decomposition
c. Combustion
d. Synthesis
- _____ 4. A catalyst is ...
a. A reactant
b. A product
c. Both a reactant and a product
d. Neither a reactant nor a product
- _____ 5. Iron can react faster with oxygen by increasing its ...
a. Concentration
b. Volume
c. Surface area
d. Texture
- _____ 6. Classify the following reaction: $\text{CaO} + \text{MgF}_2 \rightarrow \text{MgO} + \text{CaF}_2$
a. Single replacement
b. Synthesis
c. Double replacement
d. Decomposition

- ___ 7. This type of reaction can involve a metal reacting with an ionic compound.
a. Neutralization
b. Single replacement
c. Synthesis
d. Combustion
- ___ 8. For which reaction type are acids and bases the reactants?
a. Decomposition
b. Neutralization
c. Single replacement
d. Synthesis
- ___ 9. Classify the following reaction: $\text{Fe}_2\text{O}_3 + 3\text{Mg} \rightarrow 3\text{MgO} + 2\text{Fe}$
a. Single replacement
b. Decomposition
c. Synthesis
d. Double replacement
- ___ 10. Which reaction type has only one reactant.
a. Neutralization
b. Combustion
c. Decomposition
d. Single replacement

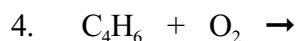
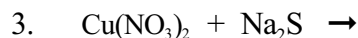
PART B In the space provided mark each of the following as true or false. (1 mark each)

- ___ 1. One of the products of a double replacement reaction is a metal.
- ___ 2. Increasing surface area generally increases the rate of a reaction.
- ___ 3. Many industrial manufacturers use catalysts.
- ___ 4. Concentration measures the amount of solute in the solution.
- ___ 5. Neutralization reactions produce acids and bases.
- ___ 6. More collisions means a slower reaction rate.
- ___ 7. Combustion reactions occur in the presence of oxygen.
- ___ 8. Single replacement reactions only occur between ionic compounds and a nonmetal.
- ___ 9. Increasing the temperature is always the most efficient way to increase the rate of a reaction.
- ___ 10. Decomposition reactions include multiple reactants.

PART C In the space provided, match each term or phrase with the best definition. (1 mark each)

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| ___ 1. Combustion | A. A reaction that produces a salt and water. |
| ___ 2. Kinetic molecular | B. A reaction involving the burning of a hydrocarbon. |
| ___ 3. Collisions | C. A measure of how quickly or slowly a reaction occurs. |
| ___ 4. Catalyst | D. Lowers the energy needed to break a reactant bonds. |
| ___ 5. Neutralization | E. $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$ |
| ___ 6. Synthesis | F. ___ theory states matter has tiny particles in constant, random motion. |
| ___ 7. Reaction rate | G. Reaction turns two ionic reactants into two different ionic products. |
| ___ 8. Double replacement | H. $\text{Be} + \text{Fe}(\text{NO}_3) \rightarrow \text{Fe} + \text{Be}(\text{NO}_3)_2$ |
| ___ 9. Decomposition | I. $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$ |
| ___ 10. Single replacement | J. Increasing this will increase the rate of the reaction. |

PART D Complete **AND** balance the following reactions, then classify the reactions as synthesis, decomposition, single replacement, double replacement, neutralization, or combustion. (3 marks each: 2 for the completed and balanced reaction, and 1 for the correct classification)



PART E Each of the following questions requires a short answer.

1. What is the function of a catalyst? Why is it useful for manufacturers to use these catalysts? (2 marks)
2. Explain why some rates of reaction are affected by surface area while some are not. (1 mark)
3. Explain how increasing the temperature of a reaction can increase the reaction rate. Provide an example where increasing the temperature may be an undesirable approach to increasing the reaction rate. (2 marks)